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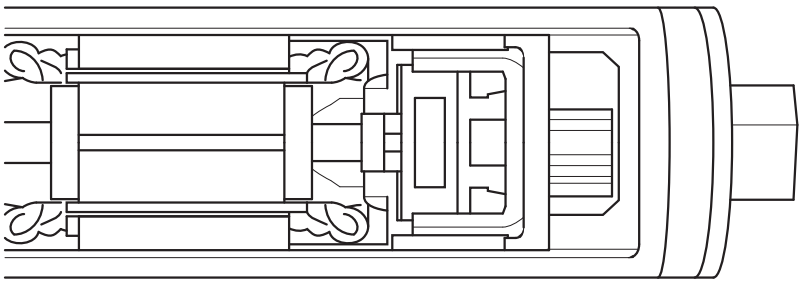

User manual

Interroll Drum Motors

C-series

S-SMP-series

S-series (DC versions)

Version 1.2 (01/2013) en
Original instructions

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Introduction

Handling of the user manual

This manual covers the following Drum Motor types:

- 80C, 113C
- 80S-SMP, 113S-SMP
- 80S DC, 113S DC

Contents of the manual

This manual contains important advice, notices, and information about the Drum Motor in all phases of its lifecycle:

- Transport, assembly, and commissioning
- Safe operation, maintenance, troubleshooting and disposal

Validity of the manual

The manual describes the Drum Motor as it is delivered by Interroll.

Special application designs require validation from Interroll and additional technical instructions.

This manual is part of the product

- ➢ For trouble-free and safe operation, and warranty claims, read this manual and follow the instructions before handling the Drum Motor.
- ➢ Keep this manual near the Drum Motor.
- ➢ Pass this manual on to any subsequent operator or occupant of the Drum Motor.
- ➢ Interroll does not accept any liability for malfunctions or defects due to failure of observe this manual.
- ➢ If you have any questions after reading this user manual, feel free to contact our customer service. See the last page for contact information.

Warnings in this manual

The warnings in this document refer to risks which may arise while using the Drum Motor. For relevant warnings, *see "Safety", page 4* and the warnings at the beginning of each chapter.

There are three categories of danger. The following signal words are used in the document as required:

- Danger
- Warning
- Caution

Signal word	Meaning
Danger	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
Warning	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
Caution	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

Structure of warnings

⚠ DANGER

Nature and source of the hazard
Possible consequence of non-observance

➢ Information about how to avoid the hazard.

Additional symbols

NOTICE

This symbol identifies possible material damage.
➢ Information about how to avoid damage.

This symbol displays safety instructions.

This symbol marks useful and important information.

➢ This symbol marks the steps that have to be carried out.

Safety

General safety instructions

The Drum Motor is designed according to the technical state of the art and is reliable in operation, once distributed. However, risks may still arise.

- Risks of physical injury to the user or bystanders.
- Adverse effects of the Drum Motor and other material.

Disregarding the warnings in this manual may lead to serious injury.

- ➢ Always read the entire operating and safety instructions before starting to work with the Drum Motor and follow the information contained herein in full.
- ➢ Only instructed and qualified persons may work with the Drum Motor.
- ➢ Always keep this user manual at hand when working on the Drum Motor so that you can consult it quickly if required.
- ➢ Always comply with relevant national safety regulations.
- ➢ If you have any questions after reading this user manual, feel free to contact our customer service. See the last page for contact information.

Intended use

The Drum Motor may be used for applications in industrial environments, supermarkets, and airports to convey goods such as parts, cartons, totes, bulk material such as granular, powder and any other freeflowing material. It must be integrated in a conveyor module or a conveying system. Any other use is considered inappropriate.

Use of the Drum Motor is only allowed in the areas described under product information.

Any changes that affect the safety of the product are not allowed.

The Drum Motor may only be used within the given operation limits.

Unintended use

The Drum Motor may not be used to transport persons.

The Drum Motor is not intended for use under impact or shock loads.

The Drum Motor is not intended for underwater use. Water ingress will eventually occur causing a short circuit or damage to the motor.

The Drum Motor may not be used as a driving pulley for cranes, lifts or their associated lifting ropes, cables and chains.

Applications not according to the intended use of the Drum Motor require approval from Interroll.

Interroll and their distributors will accept no liability for damage or failure of the product due to use outside the specifications and limitations (see chapter "Electrical data" of the respective series) unless otherwise specified in a quotation and/or writing.

Qualified persons

Qualified persons are persons who read and understand the manual and, taking national regulations into account, can competently execute incidental work.

Only instructed and qualified persons may work with the Drum Motor, taking the following into account:

- the relevant manuals and diagrams,
- the warning and safety instructions in this manual,
- the system specific regulations and requirements,
- national or local regulations and requirements for safety and accident prevention.

Risks

The following list informs you about the various types of danger or damage that may occur while working with the Drum Motor.

Persons

- ➢ Maintenance or repair work must only be performed by authorized and qualified persons in accordance with the applicable regulations.
- ➢ Before turning on the Drum Motor, ensure that no unauthorized persons are near the conveyor.

Electricity

- ➢ Only perform installation and maintenance work after you have switched off the power. Ensure that the Drum Motor cannot be turned on accidentally.

Oil

- ➢ Do not swallow the oil. The used oil is expected to be of low toxicity, but it can contain harmful substances. Ingestion may result in nausea, vomiting and/or diarrhoea. In general no treatment is necessary unless large quantities are swallowed. However, get medical advice.
- ➢ Avoid contact with skin and eyes. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
- ➢ If oil is spilt, use appropriate containment to avoid environmental contamination and clean the contaminated area as soon as possible to avoid slippery surfaces. Properly dispose of any contaminated rags or cleaning materials in order to prevent spontaneous combustion and or fire.
- ➢ If the oil burns, use foam, water spray or fog, dry chemical powder, or carbon dioxide to extinguish a fire. Do not use water in a jet. Wear proper protective equipment including breathing apparatus.
- ➢ Observe the complete safety data sheet which can be found at www.interroll.com.

Rotating parts

- ➢ Do not insert fingers between the Drum Motor and any sort of belt or roller chain.
- ➢ Tie up long hair.
- ➢ Do not wear loose clothing.
- ➢ Remove jewellery such as bracelets or wristbands.

Hot parts

- ➢ Do not touch the surface of the Drum Motor. Even normal operating temperature can cause skin burnings.

Working environment

- ➢ Do not use the Drum Motor in explosive atmospheres.
- ➢ Remove equipment or material which is not required from the workspace.
- ➢ Always wear safety shoes.
- ➢ Clearly specify and monitor the way goods are placed on the conveyor.

Avoiding malfunctions in operation

- Regularly check the Drum Motor for visible damage.
- In case of fumes, unusual noise or blocked or damaged goods, stop the Drum Motor at once and ensure that the Drum Motor cannot be started accidentally.
- Contact qualified personnel immediately to find the source of the malfunction.
- During operation do not step on the Drum Motor or on the conveyor/machine in which it is installed.

Maintenance

- As the product is maintenance free, you only need to check regularly for visible damages, unusual noise and that the fixings, screws and nuts are still tightened.
- Do not open the Drum Motor.

Accidental motor starts

- Use caution while installing or maintaining the Drum Motor, or while it is under error conditions, since it may start accidently.

Interfaces

By assembling the Drum Motor in a conveyor module, potential hazards may occur. These are not described in this manual and must be analyzed during the design, installation, and startup of the conveyor module.

- After assembling the Drum Motor in a conveyor module or other similar equipment, check the whole system for any new potential dangerous condition prior to turning on the equipment.

Product information

Product description

The Drum Motor is a totaly enclosed electric driven pulley and replaces external components such as gear-motors and gearboxes that require frequent maintenance.

The Drum Motor can operate in high concentrations of dust or grit and can be subjected to water jets or spray and will withstands most aggressive environments. Due to its IP66 or IP69k protection class and its stainless steel finish (when specified) it can also be used for food processing, hygienic or pharmaceutical applications. The Drum Motor can be used with a rubber lagging for increasing friction between the Drum Motor and conveyor belt or provided with a profiled lagging for driving modular or profiled belts or without any covering.

C-series and S-SMP-series Drum Motors are powered by an asynchronous AC induction motor which is available in different power levels and in accordance to most international voltages.

S-DC-series Drum Motors are powered by a brush type 24 V DC motor.

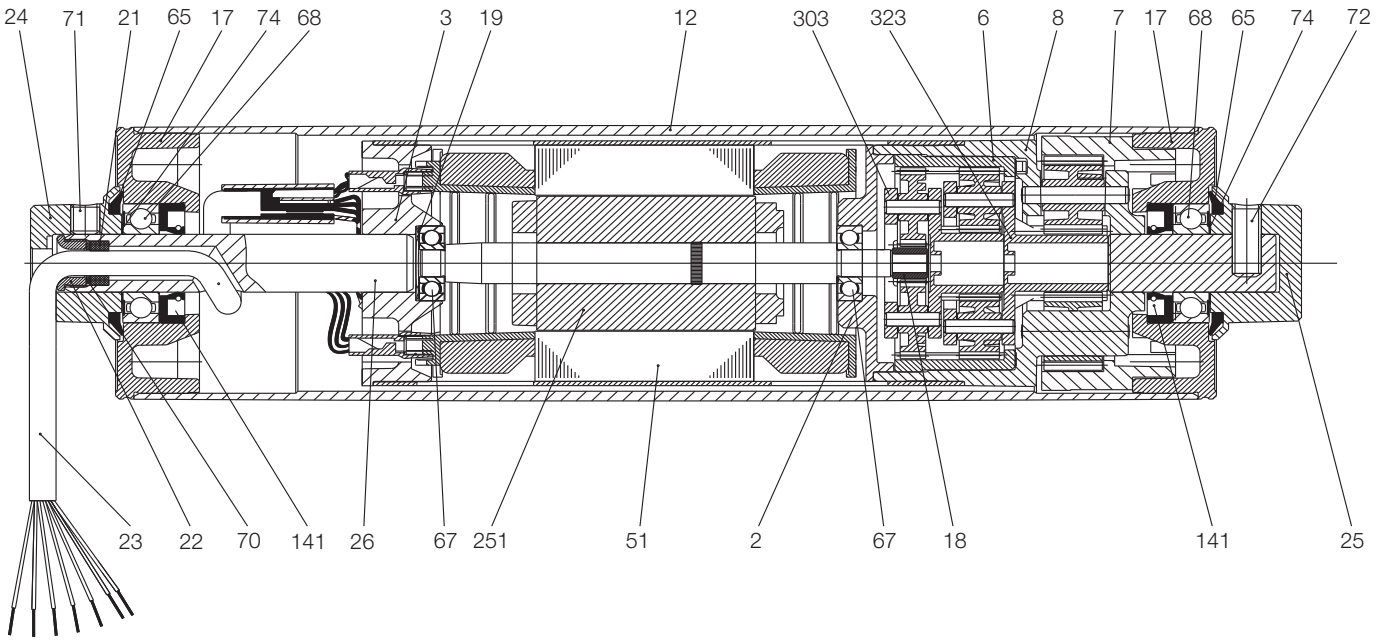
The Drum Motor contains oil that serves as lubricant and coolant by dissipating heat through the drum shell and conveyor belt.

If the Drum Motor is used without a belt or with modular belt it can be provided in a special design to ensure cooling.

Optional features

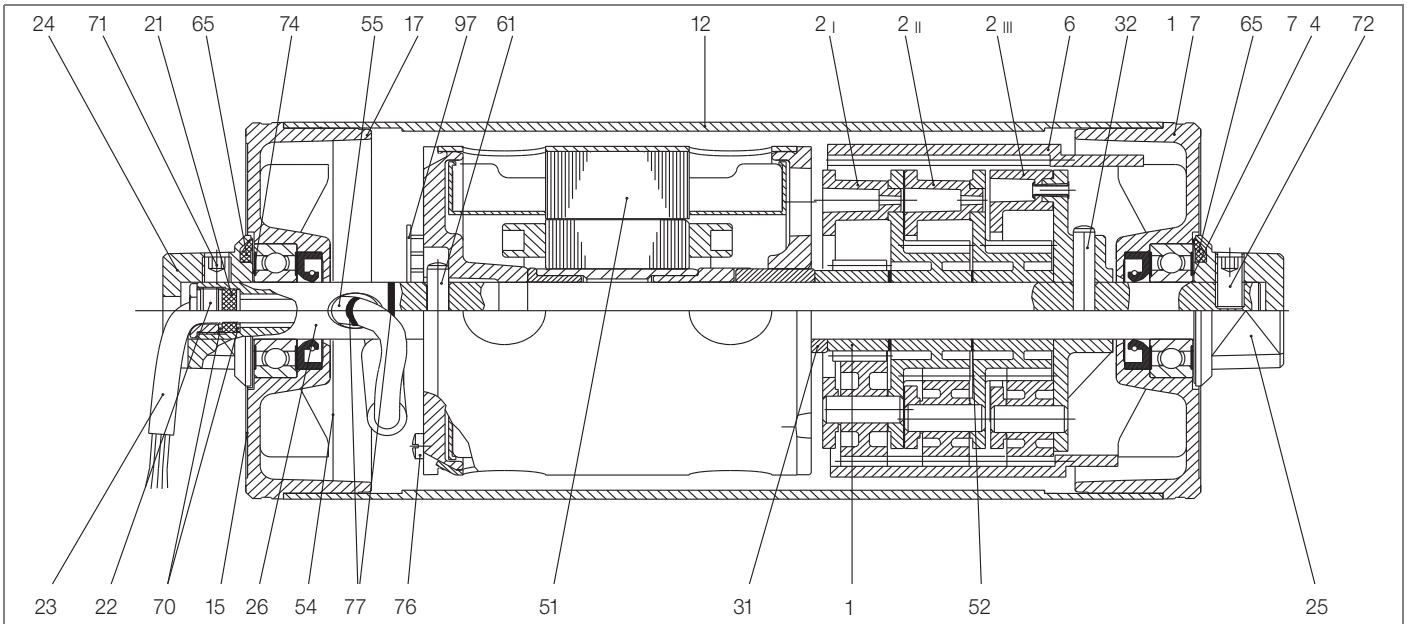
Integral Thermal Control/Thermal Winding Protection: An Integral Thermal Control switch is fitted in the winding head to prevent overheating. The switch will open if the motor overheats. However, it must be connected to a suitable external control device which will interrupt the power supply to the motor in case of overheating (*see "Thermal protector", page 24*).

Components



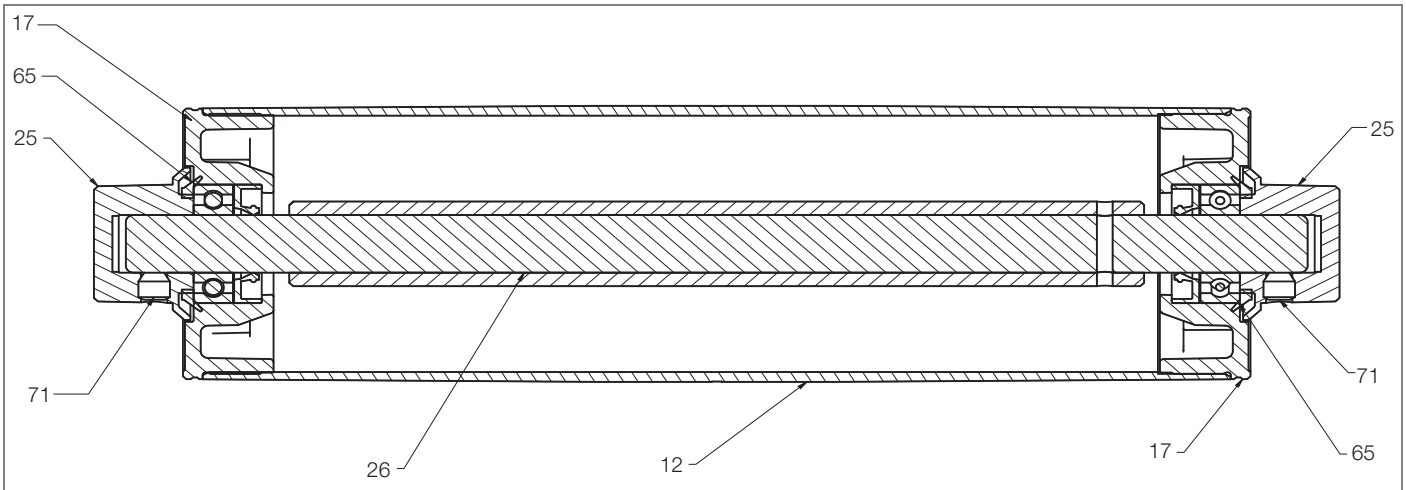
80C, 80S-SMP

2	Stator shield, front	21	Rubber bushing	68	Bearing 6003 2RS
3	Stator shield, back	22	Nipple	70	Washer
6	Geared rim	23	Cable	71	Stop screw M8 x 8 mm
7	Geared rim	24	Shaft end cap (open)	72	Stop screw M8 x 20 mm
8	Gearbox	25	Shaft end cap (closed)	74	Spacer
12	Shell	26	Rear shaft	141	Oil seal
17	End housing	51	Stator	251	Rotor
18	Rotor pinion	65	Lip seal	303	Gear stage 1
19	Wavy washer	67	Bearing 608 2RS	323	Gear stage 2



113C, 113S-SMP

1	Shaft	24	Shaft cap open	61	Pin
2	Gear stages I, II, and III	25	Shaft cap closed	65	Shaft sealing
6	Geared rim	26	Shaft	70	Washer
12	Shell	31	Seal cover	71	Set screw
15	Motor label	32	Gear pin	72	Set screw
17	Bearing House	51	Electrical motor/rotor	74	Spacer
21	Rubber seal	52	Flat washer	76	Screw for earth
22	Gland	54	Protection disk	77	Cable restrainer
23	Cable	55	Isolation	97	Terminal lock

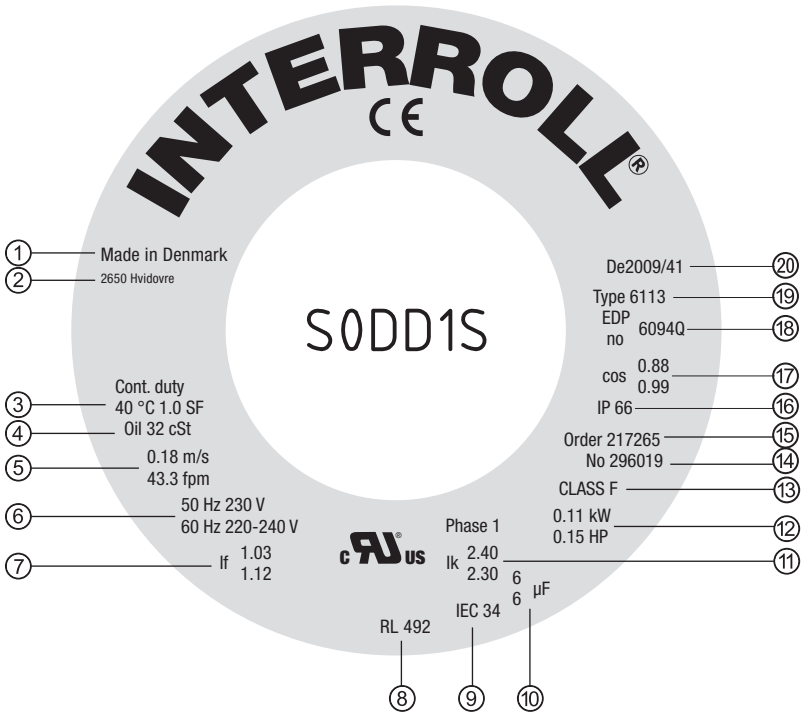


Idler Pulley C-series

12	Shell	25	Shaft end cap (closed)	65	Lip seal
17	End housing	26	Shaft	71	Stop screw M8 x 8 mm

Drum Motor label

The specifications on the Drum Motor label are used to identify the Drum Motor. This is required to use the Drum Motor as intended.



Label for C-series

① Country of production
② Place of production
③ Max. ambient temperature and service factor
④ Oil type
⑤ Drum speed
⑥ Rated voltage and frequency
⑦ Rated current
⑧ Roller / shell length
⑨ International Electrical Commission: Standard for Drum Motor
⑩ Capacitor value
⑪ Blocked motor current
⑫ Rated power
⑬ Insulation class
⑭ Serial number
⑮ Order number
⑯ Protection rating
⑰ Power factor
⑱ Article no.
⑲ Type of Drum Motor
⑳ Country and date of production

Product identification

To identify a Drum Motor, the following information is required. You may enter the values of your Drum Motor in the last column.

Information	Possible value	Own value
Drum Motor label	Motor type Speed in m/s Serial number Shell length in mm No. of poles Power in kW	
Shell (tube) diameter	e.g. 112.3 ends of drum 113.3 middle of drum	
Lagging material	e.g. Rubber Thickness Profile	

Technical data

C-series and S-SMP-series

Protection classification	IP64 (Standard) IP66 (Option)
Ambient temperature range for normal applications [1)]	+5 °C to +40 °C
Ambient temperature range for low temperature applications [1)]	-25 °C to +15 °C
Cycle times	max. 3 starts/stops per minute Higher cycle times possible with variable frequency drive (VFD) or special design
Installation altitude above sea level	max. 1000 m

[1)] Depending on the ambient temperature, different oil types may be required. For ambient temperatures under +5 °C anti-condensation heating is recommended. Under -20 °C special shaft seals and cable are required.

S-DC-series

Power supply	12 V DC to 24 V DC min. 3.2 A Frequency of the ripples ≥ 1 kHz
Fuse	2.7 A
Full load current	2.7 A
Full load current for continuous running	2.4 A
Protection classification	IP66/67
Ambient temperature range for normal applications	0 °C to +40 °C
Ambient temperature range for low temperature applications [2)]	-20 °C to +40 °C
Cycle times	max. 20 starts/stops per minute Higher cycle times on request
Noise level	No load: 49 dBA Full load: 51 dBA
Expected lifetime	3000 h continuous running 3,000,000 starts/stops
Cable	Standard cable halogen free Cable length: min. 1.1 m Diameter: ⌀ 7 mm, wires 2 x 1.5 mm²

[2)] On special request.

Electrical data for C- series and S-SMP-series

Explanation of abbreviations

P in kW	Power	I_0 in A	No load current
l_{St} in mm	Stator length	R_M in Ω	Main resistance
U in V	Voltage	R_A in Ω	Auxiliary resistance
f in Hz	Frequency	C in µF	Capacitor
n_p	Number of poles	cos φ	Power factor
I_f in A	Full load current	Th	Thermal type 125 °C
I_k in A	Blocked motor current		

80C / 80S-SMP

P	l_{St}	U	f	n_p	I_f	I_k	I_0	R_M	R_A	C	Cos φ	Th
kW	mm	V	Hz		A	A	A	Ω	Ω	µF		
0.025	75	1x230	50	4	0.39	0.68	0.31	150	150	3	0.998	S01
0.050	50	1x230	50	2	0.54	1.17	0.38	82	125	3	0.997	S01
0.075	60	1x230	50	2	0.68	1.53	0.48	66	85	4	1	S01
0.075	60	1x230	50	2	0.68	1.53	0.48	66	85	4	0.997	S01
0.110	75	1x230	50	2	0.94	1.86	0.61	51	37	6	0.999	S01
0.085	75	1x230	60	2	0.68	2.20	0.50	38	29	6	0.996	S01
0.085	75	1x230	50	2	0.73	1.80	0.37	48	52	6	0.98	S01
0.085	75	1x115	60	2	1.42	4.40	0.93	9.5	9.5	20	0.99	S01
0.085	75	1x100	50	2	1.73	4.40	1.32	9	7.3	25	0.95	S01
0.085	75	1x100	60	2	1.53	4.20	1.21	9	7.3	25	0.99	S01
0.050	60	3x400	50	2	0.22	0.74	0.17	342	-	–	0.71	S01
0.075	60	3x400	50	2	0.30	1.07	0.24	226	-	–	0.7	S01
0.085	60	3x400	50	2	0.32	1.07	0.24	226	-	–	0.74	S01
0.085	60	3x230	50	2	0.53	1.83	0.40	74.2	-	–	0.73	S01
0.085	60	3x230	60	2	0.50	1.70	0.30	74.2	-	–	0.78	S01
0.075	60	3x230	50	2	0.51	1.83	0.40	74.2	-	–	0.69	S01
0.075	60	3x230	60	2	0.49	1.70	0.30	74.2	-	–	0.74	S01
0.085	60	3x200	50	2	0.54	1.88	0.36	68.5	-	–	0.78	S01
0.085	60	3x200	60	2	0.53	1.67	0.31	68.5	-	–	0.82	S01
For frequency converter												
0.085	60	3x230	50	2	0.53	1.83	0.40	74.2	-	–	0.73	S01
0.085	60	3x230	60	2	0.50	1.70	0.30	74.2	–	–	0.78	S01

113C / 113S-SMP

P	l_{St}	U	f	n_p	I_f	I_k	I_0	R_M	R_A	C	Cos φ	Th
kW	mm	V	Hz		A	A	A	Ω	Ω	µF		
0.015	40	1x220	50	8	0.37	0.50	0.34	280	335	3	1.00	SP1
0.040	60	3x480	60	8	0.3	0.42	0.32	260	-	3	0.57	S01 1)
0.040	48	3x230	50	8	0.64	0.93	0.63	125	-	–	0.58	S01
0.040	48	3x230	60	8	0.55	0.93	0.52	125	-	–	0.58	S01
0.040	48	3x400	50	8	0.37	0.53	0.36	125	-	–	0.58	S01
0.040	48	3x460	60	8	0.36	0.53	0.35	125	-	–	0.58	S01
0.060	40	1x220-240	50	4	0.73-0.76	1.40	0.60-0.63	63.5	100	4	0.98	–
0.060	40	1x220-240	60	4	0.85-0.86	1.45	0.60-0.61	63.5	100	4	0.97	–
0.060	40	1x220-240	50	4	0.73-0.76	1.40	0.60-0.63	63.5	100	4	0.98	S01
0.060	40	1x220-240	60	4	0.85-0.86	1.45	0.60-0.61	63.5	100	4	0.97	S01
0.060	40	1x110	50	4	1.90	6.60	1.80	10.8	24.8	12	0.85	S06
0.060-0.070	40	1x110-115	60	4	1.45-1.50	3.40-3.55	1.80	10.8	24.8	12	0.90	S06
0.090	40	1x115	60	4	2.20	4.30	1.80	7.7	13.7	20	0.90	S01
0.090	40	1x220-240	50	4	0.93-1.05	1.65-1.85	0.80-1.00	42.5	65.5	6	0.91	–
0.090	40	1x220-240	60	4	1.09-1.11	1.6-1.8	0.71-0.74	42.5	65.5	6	0.96	–
0.090	40	1x220-240	50	4	0.93-1.05	1.65-1.85	0.80-1.00	42.5	65.5	6	0.91	SP1
0.090	40	1x220-240	60	4	1.09-1.11	1.6-1.8	0.71-0.74	42.5	65.5	6	0.96	SP1
0.110	40	1x230	50	4	1.20	2.00	0.80	47	74	6	1.00	S06
0.110	40	1x230	50	4	1.20	2.30	0.95	26.5	83.5	6	0.85	S01
0.110	40	3x200	50	4	0.81	2.00	0.75	22.2	-	–	0.75	S01 1)
0.110	40	3x200-208	60	4	0.81	2.00	0.58-0.61	22.2	-	–	0.69	S01 1)
0.110	40	3x230	50	4	0.80	2.60	0.70	28	-	–	0.67	S01
0.110	40	3x230	60	4	0.75	2.40	0.58	28	-	–	0.71	S01
0.110	40	3x380-420	50	4	0.44-0.46	1.50	0.38-0.40	83.5	-	–	0.72	S01
0.110	40	3x380-440	60	4	0.42-0.44	1.40	0.35	83.5	-	–	0.70	S01
0.110	40	3x230	50	4	0.85	2.20	0.70	92.5	-	–	0.67	S01 2)
0.110	40	3x230	60	4	0.78	2.16	0.59	92.5	-	–	0.71	S01 2)
0.110	40	3x400	50	4	0.44-0.46	1.38	0.41	92.5	-	–	0.72	S01 3)
0.110	40	3x460	60	4	0.42-0.44	1.50	0.42	92.5	-	–	0.70	S01 3)
0.110	40	3x460	60	4	0.45	1.00	0.32	104	-	–	0.61	S01
0.110	40	3x480	60	4	0.43	1.00	0.34	104	-	–	0.61	S01
0.110	60	1x110	50	4	2.60	5.80	2.5	6.3	13.4	20	0.88	–
0.110	60	1x110-115	60	4	2.15-2.20	5.60	1.44-1.52	6.3	13.4	16	0.94	–
0.110	60	1x110-115	50	4	2.60	5.80	2.50-2.75	6.3	13.4	20	0.88	S06
0.110	60	1x110-115	60	4	2.15-2.20	5.60	1.44-1.58	6.3	13.4	16	0.94	S06
0.110	60	1x200-240	50	4	1.00-1.13	2.40	0.85-0.90	32.5	51.5	6	0.88	–
0.110	60	1x208-240	60	4	1.05-1.27	2.30	0.70-0.88	32.5	51.5	6	0.99	–

P	l_{St}	U	f	n_p	I_f	I_k	I_0	R_M	R_A	C	Cos φ	Th	
kW	mm	V	Hz		A	A	A	Ω	Ω	µF			
0.110	60	1x200-240	50	4	1.00-1.13	2.4	0.85-0.90	32.5	51.5	6	0.88	SP1	
0.110	60	1x208-240	60	4	1.05-1.27	2.03	0.70-0.88	32.5	51.5	6	0.99	SP1	
0.110	60	1x200-240	50	4	1.00-1.13	2.40	0.85-0.90	32.5	51.5	6	0.88	S01	
0.110	60	1x208-240	60	4	1.05-1.27	2.30	0.70-0.88	32.5	51.5	6	0.99	S01	
0.110	75	1x220-240	50	6	1.16	2.20	1.05	45.9	55.5	8	0.99	S01	1)
0.110	75	1x220-240	60	6	1.40-1.43	2.25	1.00	45.9	55.5	8	0.99	S01	
0.110	75	3x220-240	50	6	1.00-1.10	2.25	0.98	30	-	–	0.67	S01	
0.110	75	3x240	60	6	0.98	1.90	0.98	30	-	–	0.67	S01	
0.110	75	3x380-420	50	6	0.60-0.64	1.30	0.57-0.65	92	-	–	0.62	S01	
0.110	75	3x440	60	6	0.57	1.10	0.55	92	-	–	0.62	S01	
0.150	75	1x110-115	50	4	3.60	7.80	3.10	4	9.8	25	0.80	S06	
0.150	75	1x110-115	60	4	2.80	7.50	1.95	4	9.8	20	0.89	S06	
0.160	60	3x220-240	50	4	0.97-1.00	3.40	0.78-0.83	24.2	-	–	0.76	S01	
0.160	60	3x220-240	60	4	0.96-1.03	3.40	0.71	24.2	-	–	0.79	S01	
0.160	48	3x210-240	50	4	0.97-1.00	3.17	0.67	64.1	-	–	0.76	S01	2)
0.160	48	3x210-240	60	4	0.87	2.97	0.67	64.1	-	–	0.79	S01	
0.160	48	3x380-420	50	4	0.56-0.58	1.83	0.49	64.1	-	–	0.76	S01	3)
0.160	48	3x380-440	60	4	0.52	2.00	0.47	64.1	-	–	0.78	S01	
0.180	60	3x200	50	4	1.22	4.80	1.06	12.2	-	–	0.71	S01	
0.180	60	3x200-208	60	4	1.09	4.50-4.70	0.83-0.87	12.2	-	–	0.75-0.72	S01	
0.180	66	3x210-240	50	4	1.43	3.40	0.78-0.83	47	-	–	0.76	S01	4)
0.180	66	3x210-240	60	4	1.23	3.30	0.7-0.73	47	-	–	0.73	S01	
0.180	66	3x380-420	50	4	0.61-0.63	2.30	0.51	47	-	–	0.76	S01	4)
0.180	66	3x460	60	4	0.63-0.70	2.60	0.49	47	-	–	0.73	S01	
0.180	75	3x210-240	50	4	1.00	4.00	0.78-0.83	15	-	–	0.76	S01	4)
0.180	75	3x210-240	60	4	1.00-1.25	4.75	0.70-0.73	15	-	–	0.73	S01	
0.180	75	3x380-420	50	4	0.61-0.63	2.30	0.45-0.48	47	-	–	0.76	S01	4)
0.180	75	3x380-440	60	4	0.63-0.70	2.60	0.40-0.42	47	-	–	0.73	S01	
0.180	75	3x440	50	4	0.56	1.85	0.45	58	-	–	0.76	S01	
0.180	75	3x460-500	60	4	0.58-0.51	2.00	0.43	58	-	–	0.66	S01	
0.180	75	3x525-575	60	4	0.40-0.47	1.90	0.31-0.40	88.5	-	–	0.66-0.73	S06	
0.180	75	1x220	50	4	1.51	2.56	1.02	22.4	36.5	8	0.97	S01	
0.250	60	3x380-420	50	2	0.68	2.60	0.44	33.5	-	–	0.86	S01	

1): not UL conform

2): Use low voltage cable

3): Use high voltage cable

4): Use low voltage cable with ph.isol.

Mechanical Data for S-DC-series

Explanation of abbreviations

P_N	Rated power	M_A	Rated torque of drum motor
gs	Gear stages	F_N	Rated belt pull of drum motor
i	Gear ratio	TE	Max. belt tension
v	Rated velocity of the shell	SL_{min}	Min. shell length
n_A	Rated revolutions of the shell		

80S DC

P_N	gs	i	v	n_A	M_A	F_N	TE	Min. start weight	SL_{min}
kW			m/s	min^{-1}	Nm	N	N	kg	mm
0.044	3	115.2	0.12	28	12.6	315	2000	100	285
		96.0	0.15	35	10.5	263	2000	80	285
		78.5	0.18	42	8.6	215	2000	67	285
		52.9	0.27	63	5.8	175	2000	52	285
		71.6	0.20	47	7.8	145	2000	44	285
		63.5	0.23	54	7.0	195	2000	60	285
		43.3	0.33	77	4.7	118	2000	36	285
		48.8	0.30	70	5.4	135	2000	40	285
		19.2	0.76	178	1.6	40	1500	16	285
		16.0	0.90	211	1.3	33	1500	13	285
		13.1	1.10	258	1.1	28	1500	11	285

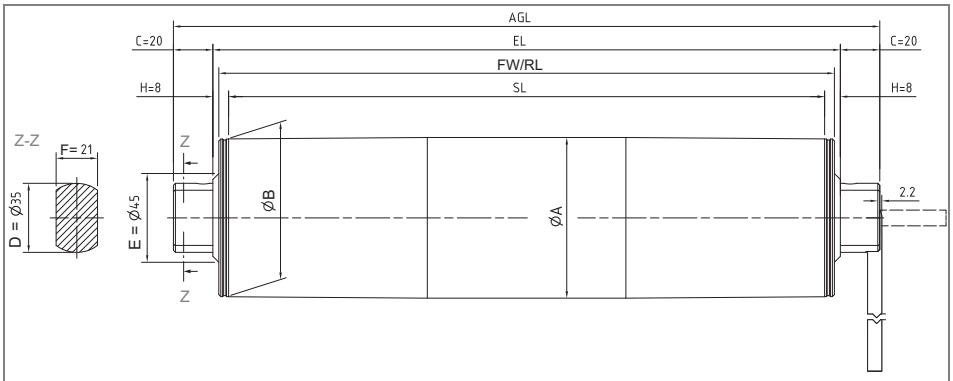
113S DC

P_N	gs	i	v	n_A	M_A	F_N	TE	Min. start weight	SL_{min}
kW			m/s	min^{-1}	Nm	N	N	kg	mm
0.044	3	115.2	0.18	26	12.6	223	2000	71	273
		96.0	0.21	30	10.5	186	2000	57	273
		78.5	0.26	37	8.6	152	2000	47	273
		71.6	0.29	42	7.8	138	2000	42	273
		63.5	0.32	46	7.0	124	2000	37	273
		52.9	0.39	56	5.8	103	2000	31	273
		48.8	0.42	60	5.4	96	2000	28	273
		43.3	0.47	68	4.7	83	2000	25	273
		19.2	1.07	154	1.6	28	1500	11	273
		16.0	1.28	184	1.3	23	1500	9	273
		13.1	1.56	224	1.1	19	1500	8	273

Dimensions

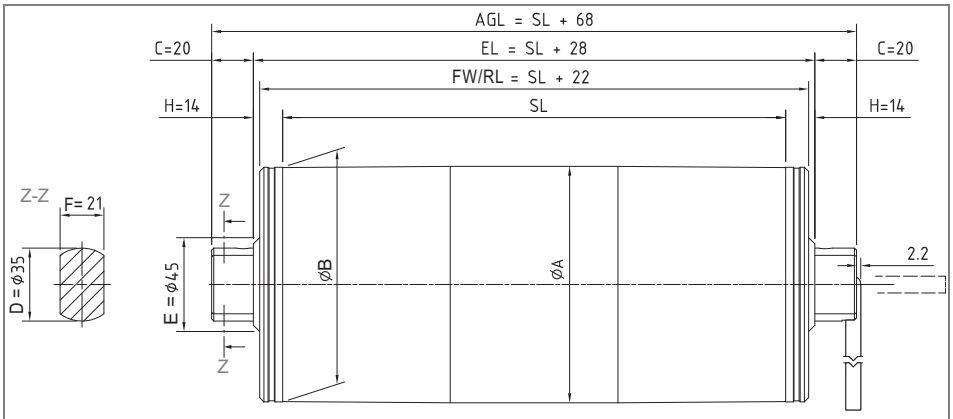
Some of the dimensions are indicated as "SL+". SL is an abbreviation for shell length. It can be generated from RL, which is indicated on the Drum Motor label (*see "Drum Motor label", page 11*). For Drum Motors 80C and 113C RL is equal to FW.

- For Drum Motor 80C / 80S-SMP / 80S DC: SL = RL - 10
- For Drum Motor 113C / 113S-SMP / 113S DC: SL = RL - 22



Dimensions of 80C / 80S-SMP / 80S DC

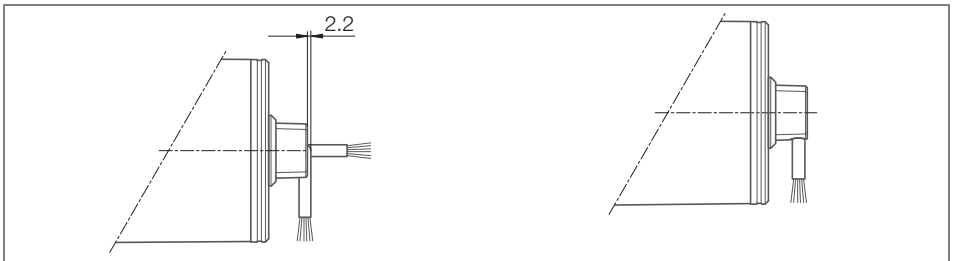
Type	A mm	B mm	C mm	D mm	E mm	F mm	H mm	FW mm	EL mm	AGL mm
80C, 80S-SMP, 80S-DC crowned SL 270 to 612 mm	81.5	80	20	35	45	21	8	SL+10	SL+16	SL+68
80C, 80S-SMP, 80S-DC crowned SL 612 to 962 mm	83	81	20	35	45	21	8	SL+10	SL+16	SL+68
80C, 80S-SMP, 80S-DC cylindrical SL 270 to 612 mm	80.5	80.5	20	35	45	21	8	SL+10	SL+16	SL+68
80C, 80S-SMP, 80S-DC cylindrical SL 612 to 962 mm	83	83	20	35	45	21	8	SL+10	SL+16	SL+68



Dimensions of 113C / 113S-SMP / 113S DC

Type	A mm	B mm	C mm	D mm	E mm	F mm	H mm	FW mm	EL mm	AGL mm
113C, 113S-SMP, 113S-DC crowned	113.3	112.5	20	35	45	21	14	SL+22	SL+28	SL+68
113C, 113S-SMP, 113S-DC cylindrical	113.3	113.3	20	35	45	21	14	SL+22	SL+28	SL+68

Shaft caps and cable connectors



Standard shaft cap, aluminium

Shaft cap with cable protection

Connections Diagrams C-series

Only standard connection diagrams are shown in ths manual. For other connections the connection diagram will be supplied seperately together with the Drum Motor.

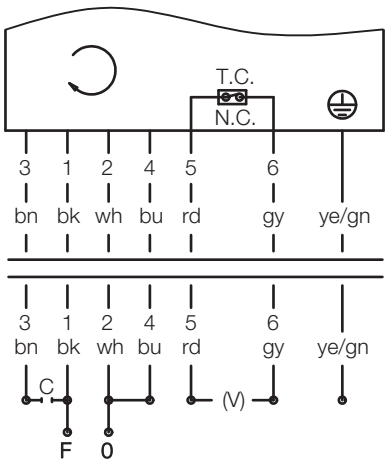
Explanation of abbreviations:

TC: Thermal control	1~: 1-phase motor	C: Capacitor
NC: not connected	3~: 3-phase motor	

Color codes:

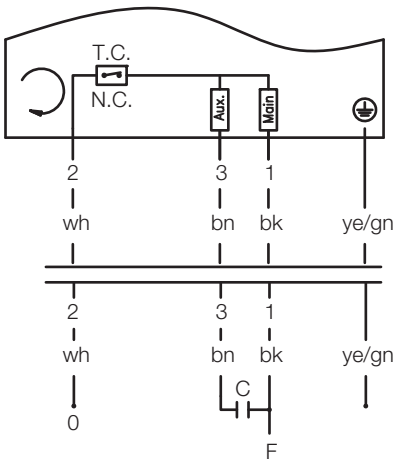
rd: red	gy: grey	wh: white
ye: yellow	gn: green	or: orange
bu: blue	bn: brown	vi: violet
bk: black	pk: pink	

Drum Motors 80C, 113C



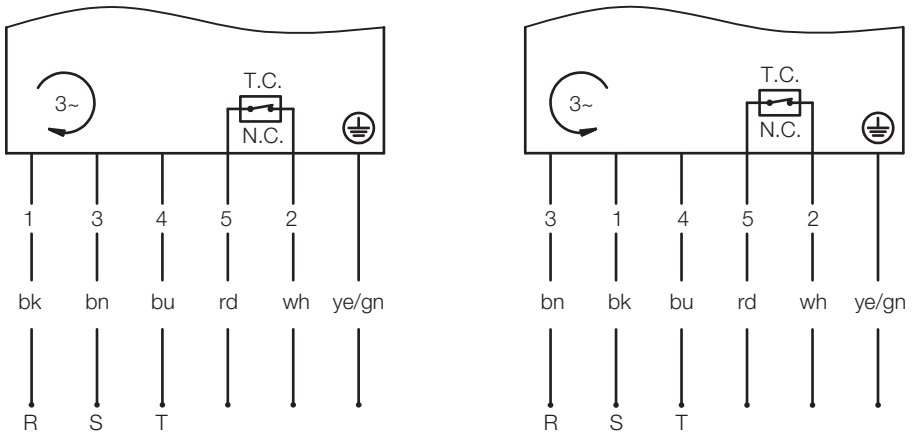
Standard connection

Thermal control is optional. When Drum Motor is without Thermal Control, leads 5 and 6 are blind.

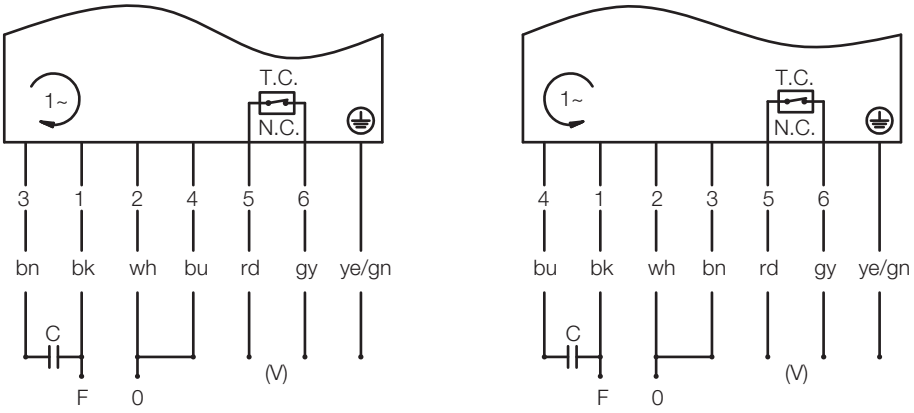


Optional connection

Drum Motors 80S-SMP, 113S-SMP

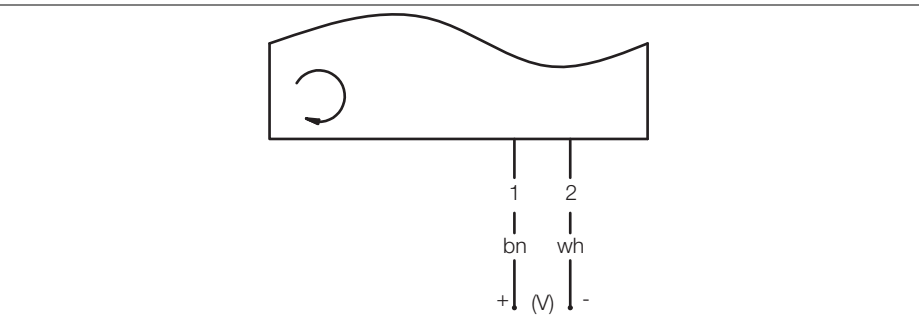


3-phase operation, 6 lead cable



1-phase operation, 6 lead cable

Drum Motors 80S DC, 113S DC

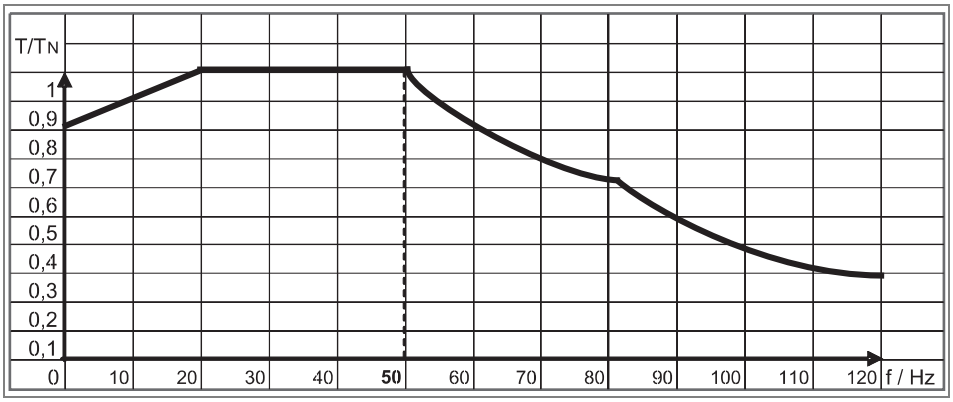


Note: For CCW rotation interchange brown and white.

Options and accessories

Asychronous Drum motors working with frequency converters

Torque as a function of the input frequency



Operating frequency Hz		5	10	15	20	25	30-50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
		available motor torque in %																			
Rated motor frequency	50 Hz	80	85	90	95	100	100	91	83	77	71	67	63	58	51	46	42	38	34	32	29
	60 Hz	75	80	85	90	95	100	100	100	92	86	80	75	71	68	63	60	55	50	45	42

Value 1: based on motor nominal frequency 50Hz

Value 2: based on motor nominal frequency 60 Hz

The dependency of torque as shown in the figure above is written as P = T x ω. With decreasing operating frequency less than 20/24 Hz, motor torque derating is provoked by changed heat removal. The power loss transfer is different in nature from standard ventilated motors affected by the oil volume. The hyperbolic character of the power equation written above supersedes to quadratic when driven with frequencies above 80…85 / 95...100 Hz affected by break-down torque and voltages influences. The output voltage/frequency curve of most of 3 x 400V / 3 x 460V supplied frequency converters can be set to 230 V / 50 Hz to connect 230 V motors. This practice generates additional motor power loss which increases abnormal heating up.

Frequency converter parameters

- **Clock frequency:** A high clock frequency leads to a better capacity factor of the motor. Optimal frequencies are 8 or 16 kHz. Parameters such as cycling testing quality (round run of the motor) and noise creation also profit from high frequencies.
- **Voltage increase:** Interroll motor-windings are designed for a nominal voltage increase speed of 1 kV/µs. If a frequency converter produces a steeper voltage increase, motor throttles can be installed between the frequency converter and motor. However, since all Interroll drum motors run in an oil bath, there is very little danger of overheating or damaging the motor due to steep voltage increase. If in doubt, please refer to your local Interroll distributor.
- **Voltage:** If a single phase input frequency converter is installed with the drum motor, ensure that the motor specified is supplied and connected for the used input voltage!
- **Output frequency:** Care should be taken with applications using output frequencies above 87/100 Hz. High frequencies can cause noise, vibration and resonance and will reduce the nominal torque output of the motor. Care should also be taken when using converters with frequencies under 25 Hz where overheating and loss of power to the motor could occur. If in doubt, please refer to your local Interroll distributor.
- **Motor performance:** Not all frequency converters are able to control motors with more than 6 poles and/or output powers under 0.2 KW / 0.25 HP. If in doubt, please refer to your local Interroll distributor or frequency converter supplier.
- **Frequency converter parameters:** Frequency converters are usually delivered with a set of standard parameters. This allows the frequency converter to be ready for use immediately. However, these standard parameters may not be specifically optimized for your motor and therefore, it may be necessary to adjust the parameters for a specific motor.

Thermal protector

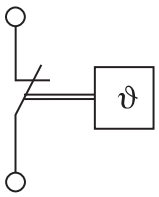
The thermal control protection switch fitted inside the stator coil is closed under normal running conditions. If the motor overheats, the switch will open at a preset temperature (depending on the winding insulation class) before damage to the motor can occur.

⚠ WARNING

The switch automatically re-sets when the motor has cooled down
Unintentional start of the motor

- Connect the switch to a suitable relay or contactor to ensure disconnection of the power supply to the motor when tripped.
- When the switch has tripped, wait until the motor has cooled down and ensure that no persons are endangered before restarting the motor.

Standard version: Temperature limiter, automatically resetting



Lifetime: 10 000 cycles			
AC	cos φ = 1	2.5 A	250 VAC
	cos φ = 0.6	1.6 A	250 VAC
DC		1.6 A	24 VDC
		1.25 A	48 VDC
Lifetime: 2 000 cycles			
AC	cos φ = 1	6.3 A	250 VAC
Back setting temperature		40 K ± 15 K	
Resistance		< 50 mΩ	
Contact bounce time		< 1 ms	

Transport and storage

Transport

⚠ CAUTION

Risk of injury due to improper transport

- Transport may only be carried out by qualified and authorized persons.
- For Drum Motors with diameters of 136 mm or above use a lifting rope or harness during transport. The working load capability of the lifting rope or harness must exceed the weight of the Drum Motor. They also must be securely attached onto the shafts when lifting.
- Do not stack pallets.
- Make sure that the Drum Motor is fixed properly before transport.

NOTICE

Risk of damages to the Drum Motor due to improper transport

- Avoid hard shocks during transport.
- Do not lift the Drum Motor by the cable or Terminal Box.
- Do not transfer the Drum Motors between warm and cold environments. This may cause water condensation.
- Ensure that the S-series Drum Motors which are manufactured for vertical mounting are transported in horizontal position.

- Check each Drum Motor for damage after transport.
- In case of damage, take photos of the damaged parts.
- Report any damage caused by transport immediately to the transport company and Interroll, to maintain warranty.

Storage

⚠ CAUTION

Risk of injury due to improper storage

- Do not stack pallets.
- Do not stack more than four carton boxes.
- Ensure proper fixing.

- Store the Drum Motor in a clean, dry and enclosed area between +15 and +30 °C and protect it from wet and damp.
- For storage periods of more than three months rotate the shaft periodically to prevent deterioration of the shaft seals.
- Check each Drum Motor for damage after storage.

Assembly

Warning notices concerning installation

⚠ CAUTION

Rotating parts and accidental motor start-ups
Risk of pinched fingers

- ➢ Do not insert fingers between the Drum Motor and any sort of belt or roller chain.
- ➢ Install a protection device (such as a guard plate) to prevent fingers from getting trapped in any sort of belt or roller chain.
- ➢ Attach an appropriate warning notice on the conveyor.

NOTICE

Risk of damage leading to failure or shortened life expectancy of the Drum Motor

- ➢ Observe the following notices.

- ➢ Do not drop or mishandle the Drum Motor to prevent internal damage.
- ➢ Check each Drum Motor for damage before installation.
- ➢ Do not hold, carry or support the Drum Motor by the cables or wires extending out of the mounting shaft to prevent damage to the internal solder joints and sealings.
- ➢ Do not twist the motor cable.
- ➢ Do not overtension the belt.

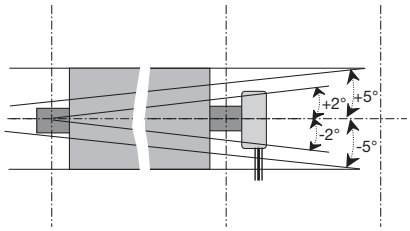
Mounting the Drum Motor

Positioning the Drum Motor

- ➢ Ensure that the data label information is correct and meets the specification that has been ordered and confirmed.

For non-horizontal Drum Motor applications a special design is required. The design must be specified at time of order.
Contact Interroll if in doubt.

The Drum Motor has to be mounted horizontally within +/- 5° (Drum Motor 113s: +/- 2°) unless otherwise indicated in the order confirmation.



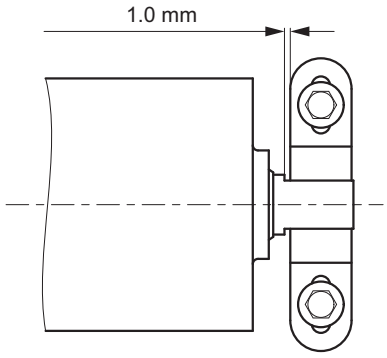
Drum Motor position

Mounting the Drum Motor with mounting brackets

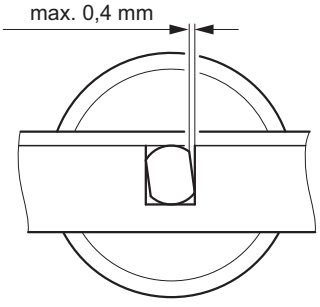
The mounting brackets must be strong enough to withstand the torque produced by the motor.

- Fix the mounting brackets securely to the conveyor or machine frame. Ensure that the Drum Motor is fitted parallel to the idler pulley and at right angles to the conveyor frame.
- Insert the shaft ends of the Drum Motor into the mounting bracket according to the diagram "Mounting orientation" (see above).
- If it is necessary to fix the shaft to the mounting brackets, fix it only on one side so that the opposite side allows axial movement for thermal expansion. Torque fixing for S-, D-series, 80i, 113i, 217i and 315i: fix non-cable side Torque fixing for 138i, 165i, 216i and 113E: fix cable side
- Ensure that at least 80 % of the Drum Motor shaft flat lengths are supported by the mounting bracket.
- Ensure that the clearance between the flats and the mounting bracket is not more than 0.4 mm.
- If the Drum Motor will be used with frequent reversible operations or many start/stops: Ensure that there is no clearance between the flats and the mounting bracket.

It is also possible to mount the Drum Motor without mounting brackets. In this case, the shaft ends have to be fitted into cut-outs that are cut into the conveyor frame and reinforced to fulfill the above requirements.



Axial play



Torsion play

- If necessary, fix a retaining plate over the mounting bracket to secure the Drum Motor's shaft. However ensure that the shaft can move axially on one side to allow for thermal expansion.

Mounting belt

Belt width/shell length

NOTICE

Risk of overheating due to small belt

- Ensure that the Drum Motor is fitted with a conveyor belt that covers at least 70 % of the Drum Motor face width (roller length).

Drum Motors having less than 70 % belt contact or fitted with a modular belt or without a belt may require a different design and must be specified at time of order. If in doubt, contact Interroll.

Belt alignment

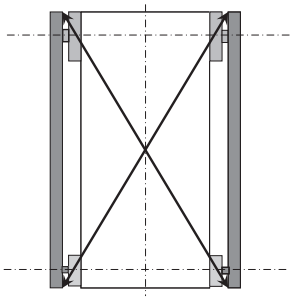
Crowned shells help to centralise and guide the belt during normal operation. However, belt alignment should be made carefully, checked frequently during the initial start up phase and adjusted as necessary according to the load conditions.

NOTICE

Risk of shortened life expectancy, damage of belt and bearing due to misalignment

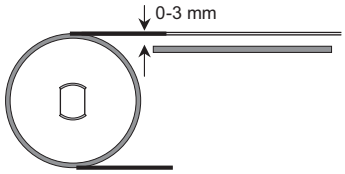
- Align the Drum Motor, belt and idler pulleys following the instructions in this manual.

- Align the belt by using the return idler rollers, carrying rollers and/or when fitted, the bend pulleys or snub pulleys.
- Check the diagonal measurements (between the drum motor shafts and tail/ idler pulley shafts or belt edge to belt edge).
  The maximum difference must not be more than 0.5 %.



Diagonal check

The gap between the belt and the slider bed plate should be not more than 3 mm.



Belt position

Tensioning the belt

The necessary belt tension depends on the application. Refer to the belt manufacturer's catalog or contact Interroll for advice.

NOTICE

Risk of shortened life expectancy, worn bearings and oil leakage due to overstretched belts.

- Do not tension the belt more than recommended by the belt manufacturer or than given in the product tables of the catalogue.
- When using a modular belt, a steel belt, a Teflon fiberglass belt, or a PU thermal moulded belt, no belt tension should be applied (refer to the belt manufacturers instructions).

- Adjust the belt tension by tightening or loosening the respective screws on both sides of the conveyor to ensure that the Drum Motor remains square to the conveyor frame and parallel to the tail / idler pulley.
- Tension the belt sufficiently only to drive the belt and its load.

Rubber lagging

Subsequently applied rubber lagging may cause overheating of the Drum Motor. For certain Drum Motors limitations to the thickness of lagging may apply.

To help to reduce thermal overload, the calculated required power should be multiplied by a factor of 1.2.

When applying rubber lagging, contact Interroll for the type and maximum thickness allowed.

Warning notices concerning the electrical installation

⚠ WARNING

Risk of electric shock

- Ensure that the electrical installation is only be executed by qualified and authorized persons.
- Disconnect the power supply before installing, removing or rewiring the Drum Motor.
- Always refer to the connection instructions and ensure that the motor power and control circuits are connected properly.

NOTICE

Risk of damage to the Drum Motor

- Do not apply DC supply to an AC Drum Motor or AC supply to a DC Drum Motor as this will cause irreparable damage.
- Do not connect D-series Drum Motors directly to the mains supply. Connect the D-series Drum Motors only to suitable VFD or servo drive controllers.

Electrical connection of the Drum Motor

Connecting Drum Motor - Cable option

- Ensure that the motor is connected to the correct voltage supply according to the motor data label.
- Ensure that a suitable earth connection is made to the Drum Motor cable lead colored green/yellow.
- Connect the Drum Motor according to the connection diagrams (*see page 20*)

Single-phase motor

Single-phase Drum Motors should be connected to a starting capacitor and a running capacitor if 100 % starting torque is required. Without a starting capacitor, the starting torque may be as low as 70 % of the nominal torque listed in the Interroll catalog.

Interroll recommends to use capacitor type class B 10.000 hours / 450 V according to EN 60252.

For connection of starting capacitors, refer to the connection diagrams (see chapter "Connection Diagrams" of the respective series).

External motor protection

- Protect the motor with a suitable fuse or another suitable external motor protection device. Ensure that the protection device is set according to the rated current of the specific motor (see label).
- Protect the power supply from potential back EMF. The motor produces back EMF when an outside force acts upon it.
- Install an overload protection for each individual motor. Forms of overload protection include slow-blow fuses, circuit breakers, and current limiters.

Integral Thermal Control

⚠ CAUTION

Accidental motor starts. Risk of pinched fingers.

- ➢ Connect the Integral Thermal Control switch to an external control device which interrupts the motor power supply in case of overheating.
- ➢ Investigate and remedy the cause of the overheating prior to turning on the power supply again, when the Internal Thermal Control switch has been tripped.

The maximum switching current of the thermal switch is 2.5 A as standard. For other options please contact Interroll.

Frequency converter

Asynchronous Drum Motors can be operated with frequency converters. Frequency converters from Interroll are already set (when specified) to the parameters suitable for the respective Drum Motor.

- ➢ If you don't use an Interroll frequency converter, set up the frequency converter using the correct parameters according to the motor data.
- ➢ Do not allow resonant frequencies in the power line to cause voltage spikes in the motor.
  Frequency converters create resonant frequencies in the cable between the frequency converter and the motor if the cable is too long.
- ➢ Use a fully screened cable to connect the frequency converter to the motor.
- ➢ If the cable is longer than 10 m or if one frequency converter controls more than one motor install a motor sine filter or a motor inductor.
- ➢ Ensure, that the cable screen is connected to ground earth, according to electrical engineering rules and to local EMC recommandations.

Initial startup and operation

Initial start up

Do not operate the Drum Motor before the motor is correctly installed and connected to the power supply, with all rotating parts protected or guarded by the original equipment.

Inspections before initial startup

The Drum Motor is supplied factory-filled with the correct amount of oil and is ready for installation. However, before the initial startup of the motor the following procedures must be carried out:

- Ensure that the motor data label matches the specification ordered.
- Ensure that no objects are in contact with rotating or moving parts.
- Ensure that the Drum Motor and the conveyor belt are free to move.
- Ensure that the belt is tensioned correctly according to the Interrolls recommendations.
- Ensure that all bolts are tightened according to the specifications.
- Ensure that no additional dangerous areas arise due to interfaces with other components.
- Ensure that the Drum Motor is wired correctly and connected to the correct supply voltage.
- Check all safety devices.
- Ensure that no bystanders are in dangerous areas around the conveyor.

Operation

⚠ CAUTION

Rotating parts and accidental starts
Risk of pinched fingers

- Do not insert fingers between the Drum Motor and the belt.
- Do not remove the protection device.
- Keep fingers, hair and loose clothing away from the Drum Motor and the belt.

Precise speed requirements
If exact speeds are required, the use of a frequency converter and/or the Encoder solution may be required.
The given nominal motor speeds can deviate by ± 10 %. The belt speed specified on the label is the calculated speed on the shell diameter under full load at nominal voltage.

If using a reversible conveyor:
A time delay between forward and reverse function is required.
The motor must come to a complete stop before reversing.

Inspections before every startup

- Check the Drum Motor for visible damage.
- Ensure that no objects are in contact with rotating or moving parts.
- Ensure that the Drum Motor and the conveyor belt are free to move.
- Check all safety devices.
- Ensure that no bystanders are in dangerous areas around the conveyor.
- Clearly specify and monitor the way goods are placed on the conveyor.

Procedure in case of accident or malfunction

- Stop the conveyor at once and ensure that it cannot be started accidentally.
- In case of an accident: Provide first aid and call for emergency assistance.
- Inform responsible persons.
- Have the malfunction repaired by qualified persons.
- Start the conveyor only after this has been approved by qualified persons.

Maintenance and cleaning

Warning notices concerning maintenance and cleaning

⚠ CAUTION

Risk of injury due to improper handling or accidental motor starts

- Maintenance work and cleaning may only be executed by qualified and authorized persons.
- Only perform maintenance work after switching off the power. Ensure that the Drum Motor cannot be turned on accidentally.
- Set up signs indicating maintenance work.

Preparation for maintenance and hand cleaning

- Switch off the power supply of the Drum Motor.
- Turn off the main power supply switch to disconnect the Drum Motor.
- Open the Terminal Box and disconnect the cables.
- Put up a sign at the control box signalizing the maintenance work.

Maintenance

In general Interroll Drum Motors are maintenance-free and require no specific attention during their normal operational lifetime. Nevertheless some inspections should be done at periodical intervals:

Checking the Drum Motor

- Each day, ensure that the Drum Motor is free to rotate without encumbrance.
- Each day, check the Drum Motor for visible damage.
- Each day, check that the belt is aligned correctly and runs central to the drum motor and parallel with the conveyor frame. Adjust the alignment if necessary.
- Once per week, ensure that the drum motor shaft and brackets are secured properly to the conveyor frame.
- Once per week, ensure that cables, leads and connections are in good condition and fixed securely.
- Once per week, if re-greasable nipples are supplied, top up as necessary with Shell Cassida grease RLS 2 food grade synthetic.

Changing the oil

It is not necessary to change the oil of the Drum Motor.

Replacing a Drum Motor

If a Drum Motor is damaged or broken, remove it before repair or replacement (*see "Abandonment", page 42* and *see "Mounting the Drum Motor", page 26*).

Cleaning

Material build up on the drum motor or on the underside of the belt will cause belt misalignment and possibly belt damage. Material build up between the belt and slide bed plate or rollers may also cause belt speed reduction and increase the power requirement. Periodic cleaning will ensure a high drive efficiency and good belt alignment.

- Remove foreign material from the drum.
- Do not use sharp-edged tools to clean the drum.

Troubleshooting

Error search

Symptom	Possible cause	Help
Motor does not start or stops during operation	No power supply	Check power supply.
	Incorrect connection or loose / broken cable connection	Check connection according to diagram. Check for broken cables / loose connections.
	Overheating of the motor	See symptom "Motor gets hot during normal operation".
	Motor overloaded	Disconnect main power supply and identify and remedy reason for overload.
	Internal thermal control tripped / failure	Check for overload / overheating. When cool, check continuity of internal thermal control. See symptom "Motor gets hot during normal operation".
	External overload protection tripped / failure	Check for overload / overheating. Check continuity and function of external overload protection.
	Motor winding phase failure	Replace Drum Motor or contact your local Interroll distributor for further help and advice.
	Motor winding short circuit (insulation failure)	Replace Drum Motor or contact your local Interroll distributor for further help and advice.
	Drum or conveyor belt is blocked	Make sure the belt and the Drum Motor are free from obstruction and that all rollers and drums rotate freely. If the Drum Motor cannot rotate freely, it might be a seize-up of transmission or bearing. In this case, contact your local Interroll distributor for advice.
	Low ambient temperature / high oil viscosity	Check if oil viscosity is suitable for the ambient temperature. If not, replace with oil having the correct specification. Install heating device or higher powered Drum Motor. In this case, contact your local Interroll distributor for further help and advice.
	Transmission or bearing seizure	Check by hand wether the drum can rotate freely. If not, replace Drum Motor or contact your local Interroll distributor for further help and advice.
Motor runs but drum does not rotate	Loss of transmission	Contact your local Interroll distributor for further help and advice.

Symptom	Possible cause	Help
Motor gets hot during normal operation	Overload of Drum Motor	Check nominal current for overload.
	Ambient temperature over 40 °C	Check ambient temperature. If too high, install cooling device. Contact your local Interroll distributor for further help and advice.
	Excessive or frequent stops/starts	Check if the number of stops/starts meets the Drum Motor's specifications and reduce frequency as necessary. Install frequency converter to optimize motor performance.
	Excessive belt tension	Check belt tension and reduce as necessary.
	Motor is not suitable for the application	Check if application meets the Drum Motor's specifications. Special de-rated motors are required when working with modular belts or without belts.
	Lagging too thick	Reduce lagging or contact your local Interroll distributor for further help and advice.
	Incorrect power supply	Check power supply. If in case of single phase: possibly wrong start capacitors or run capacitors installed.
	Incorrect frequency converter settings	Check if frequency converter settings meet the Drum Motor's specifications and revise.
Loud noises when the Drum Motor runs in normal operation	Incorrect frequency converter settings	Check if frequency converter settings meet the Drum Motor's specifications and revise.
	Loose mounting brackets	Check mounting brackets, shaft tolerances and fixing bolts.
	Belt overtensioned	Check belt tension and reduce as necessary.
	Faulty / incorrect profile between drum and belt	Make sure the belt and drum profiles match and are engaged properly. Replace if necessary.
	One phase of the power lead is not connected properly.	Check the cable connection and correct it if necessary.
Drum Motor runs with high vibration	Incorrect frequency converter settings	Check if frequency converter settings meet Drum Motor's specifications and revise.
	Loose mounting brackets	Check mounting brackets, shaft tolerances and fixing bolts
	Drum Motor out of balance	Check if specifications for Drum Motor include static or dynamic balancing and adjust.

Symptom	Possible cause	Help
Drum Motor runs intermittently	Drum Motor / belt is intermittently or partially blocked	Make sure the belt and Drum Motor are free from obstructions and that all rollers and drums rotate freely.
	Incorrect or loose power lead connection	Check connections.
	Damaged transmission	Check rotation by hand. Replace Drum Motor or contact your local Interroll distributor for further help and advice.
	Wrong or faulty power supply	Check power supply. If single phase, check capacitors.
Drum Motor / belt runs slower than specified	Incorrect motor speed ordered / supplied	Check Drum Motor specification and tolerances. Replace Drum Motor or contact your local Interroll distributor for further help and advice.
	Drum Motor / belt is intermittently or partially blocked	Make sure the belt and Drum Motor are free from obstruction and that all rollers and drums rotate freely.
	Incorrect frequency converter settings	Check if the frequency converter settings meet the Drum Motor's specifications and revise.
	Belt slipping	See symptom "Belt slipping on Drum Motor".
	Lagging slipping on drum shell	Check lagging condition and adhesion of lagging to shell. Replace lagging. Shot blast or roughen the shell surface to ensure good lagging adhesion.
	60 Hz motor installed in 50 Hz supply	Check motor specification and tolerances against supply voltage / frequency. Replace Drum Motor or contact your local Interroll distributor for further help and advice.

Symptom	Possible cause	Help
Drum Motor runs faster than specified	Incorrect motor speed ordered / supplied	Check Drum Motor specification and tolerances. Replace Drum Motor or contact your local Interroll distributor for further help and advice.
	Incorrect frequency converter settings	Check if frequency converter settings meet Drum Motor's specifications and revise.
	50 Hz motor installed in 60 Hz supply	Check if motor specification and tolerances meet supply voltage / frequency. Replace Drum Motor or contact your local Interroll distributor for further help and advice.
	Rubber lagging thickness has increased the belt speed over the nominal speed of the motor	Measure the thickness of rubber lagging and check if this was included and calculated when choosing the Drum Motor speed. Reduce the lagging thickness or install frequency converter or replace with Drum Motor having lower speed.
Motor winding - one phase failed	Winding isolation failure / overload	Check continuity, current and resistance on each phase winding. Replace Drum Motor or contact your local Interroll distributor for further help and advice.
Motor winding - two phases failed	Power supply failure on one phase causing overload on the other two phases / isolation failure	Check the supply to all phases. Check continuity, current and resistance on each phase winding. Replace Drum Motor or contact your local Interroll distributor for further help and advice.
Motor winding - all three phases failed	Motor overloaded / wrong supply connected	Check correct supply voltage. Check continuity, current and resistance on each phase winding. Replace Drum Motor or contact your local Interroll distributor for further help and advice.

Symptom	Possible cause	Help
Belt slipping on Drum Motor	Belt blocked	Make sure the belt and Drum Motor are free from obstruction and that all rollers and drums rotate freely.
	Insufficient friction between Drum Motor and belt	Check belt condition and tension, check drum shell or lagging condition and look for oil or grease between belt and Drum Motor.
	Excessive friction between belt and support / slide bed	Check underside of belt and slide bed for dirt / poor finish. Check for water infiltration between belt and slide bed which could cause suction and drag.
	Insufficient belt tension	Check belt condition and tension or shorten belt.
	Insufficient or wrong drum profile for modular belt	Make sure the belt and drum profiles / teeth are engaged properly. Make sure the height and tension of the belt are according to the belt manufacturer's specifications.
	Oil, grease or fat between belt and shell of Drum Motor	Remove excessive build up of oil, fat or grease. Make sure cleaning devices function correctly.
	Head / tail / transfer pulley diameters too small for belt	Check minimum drum diameter for belt. Knife edges / small diameter pulleys may cause excess friction and require more power.
	Lagging slipping on drum shell	Check lagging condition and adhesion of lagging to shell. Replace lagging. Shot blast or roughen the shell surface to ensure good lagging adhesion.
Belt jumping on Drum Motor	Belt blockage or material build-up on drums Poor or damaged belt joint Excess friction between belt and slide bed	Make sure the belt and drum are free from obstructions and that all rollers and drums rotate freely. Check belt joint.
	Conveyor belt loose or damaged	Check belt tension, condition of belt and lagging. Check belt tracking and alignment.
	Incorrect lagging / sprocket profile for modular belt	See symptom "Belt slipping on Drum Motor".

Symptom	Possible cause	Help
Belt misaligned / tracking off center	Material build-up on Drum Motor / pulleys / belt	Make sure the belt and drum are free from obstructions and that all rollers and drums rotate freely. Check belt joint.
	Material build-up on rollers	Check if material spillage occurs and that cleaning devices are functioning correctly.
	Faulty belt or badly joined belt	Check condition of belt and belt joint.
	Belt tension higher on one side	Make sure that the belt tension is equal on both sides.
	Top / bottom rollers out of alignment	Check alignment of carrying and return rollers.
	Head / tail / intermediate pulley out of alignment	Check alignment of Drum Motor and pulley.
	Conveyor frame out of alignment	Make sure conveyor frame is square, parallel and straight over its length.
	Load feeding from one side	Check force or friction at point of transfer.
	Belt profile not engaged with drum profile	Make sure the belt and drum profiles match and are engaged properly and not misaligned.
	Insufficient drum crowning for belt	Check belt / Drum Motor specifications.
Oil leakage around shaft seal	Shaft seals worn	Check for adverse abrasive or chemical conditions. Check operational life of seals.
	Shaft seals damaged	Make sure the seals are free from steel framework, material build up and other devices.
	Shaft bearings damaged / worn	Check the belt for excessive tension and loading. Check for water or chemical infiltration.
Oil leakage around cable	Loose cable connector gland Internal cable seal fault	Make sure the cable connector gland and seals are tight and not subject to excessive heat or chemicals.
	Loose connector gland	Make sure the connector gland and seals are tight and not subject to excessive heat or chemicals.
Oil leakage around shell / end house	End housing loose in shell	Check for gaps between shell and end housings. Check for excessive belt tension or shock loading.
	End house / shell seal broken	Check for excessive heat or belt tension and shock loading.

Symptom	Possible cause	Help
Cable broken or damaged	Customer misuse or damage during installation	Check the nature of the damage and possible cause. Replace Terminal Box.
	Damaged in transit	Check the nature of the damage and possible cause. Replace Terminal Box.
Shaft bearings failure	Overload	Check if the application loading meets the Drum Motor's specifications.
	Shock loading	Check if application loading meets Drum Motor's specifications.
	Excessive belt tension	Check for excessive belt tension. Reduce as necessary.
	Lack of lubrication	Check the Drum Motor's oil level and installation. If vertically mounted, check Drum Motor motor specifications.
	Shaft stress or misalignment	Check for excessive screw tension and frame or mounting bracket misalignment.
	Shaft seal damaged / worn	Check for external contamination. Contact your local Interroll distrubutor.
	Loose or tight bearing journal fitting	Contact your local Interroll distrubutor.
Transmission failure	Overload / shock loading or normal wear and tear	Check if application loading meets the Drum Motor's specifications. Check lifespan.

Abandonment and disposal

Abandonment

⚠ CAUTION

Risk of injury due to improper handling

- Abandonment may only be executed by qualified and authorized persons.
- Only abandon the Drum Motor after switching off the power. Ensure that the Drum Motor cannot be turned on accidentally.

- Disconnect the motor cable from the supply voltage and control.
- Release the belt tension.
- Remove the retaining plate from the mounting bracket.
- Extract the Drum Motor from the conveyor frame.

Disposal

The operator is responsible for the proper disposal of the Drum Motor. In doing so, industry-specific and local provisions must be observed for the disposal of the Drum Motor and its packaging.

Appendix

Guarantee for Interroll Drum Motors

Interroll provides 2 years guarantee covering their range of Drum Motors against faulty workmanship and/or materials from the date of delivery or collection from their works. The guarantee period is based on normal operational use of the product for 8 hours per day, unless otherwise previously agreed in writing.

Subject to the terms of this guarantee, Interroll will repair or replace any faulty product free of charge that is returned to their factory within the guarantee period. Repairs carried out under guarantee period will not extend the guarantee.

Warranty restrictions

Interroll and their distributors accept no liability for failure or damage to the product due to:

- Failure to carry out Interroll's installation or maintenance instructions
- Failure to install a recognised motor protection device
- Failure to connect the Interroll internal thermal protection switch when fitted
- Reversing the drum motor before the motor has come to a complete standstill
- Use of the drum motor outside the specifications stated on the data plate and/ or current Interroll catalogue or quotation
- Repairs, alterations or modifications carried out to the product by anyone other than a qualified Interroll representative will render this guarantee null and void unless such repairs have been previously agreed in writing by Interroll.

Exclusions

The INTERROLL guarantee excludes any liability for:

- Rubber lagging or other added materials due to normal wear or misuse
- Costs of the removal and return of the product to INTERROLL under the terms of this guarantee
- Damage to other equipment used in connection with the product
- Loss of earnings, personal injury and any other costs incurred due to the failure of the product

Declaration of incorporation

in terms of the EC-Machine Directive 2006/42/EG, Annex II 1 B

The manufacturer

Interroll Joki A/S
Hammerholmen 2-6
2650 Hvidovre
Denmark

hereby declares with sole responsibility that the product series

- Drum Motor C-series
- Drum Motor S-SMP-series
- Drum Motor S-series DC version
- Cassette C-series

fully comply with the safety and health requirements of the Machinery Directive 2006/42/EC Appendix I.

The relevant technical documents according to appendix VII B are available and will be presented to the competent national authorities electronically, if required.

Person authorised to compile the technical file: Jan Støvring Jensen, Interroll Joki A/S, Hammerholmen 2-6, DK-2650 Hvidovre

The partly completed machinery complies with the following EC directives:
- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- RoHS Directive 2002/95/EC

The following harmonised standards were applied:
- EN ISO 12100-1
- EN ISO 12100-2
- EN ISO 14121-1

Initial start-up of the partly completed machinery is not permitted until the machinery is incorporated into a machinery which complies with the machinery directive. The EC declaration of conformity must be available according to appendix II A.

Hvidovre, Denmark, December 27th 2010

Anders Staf Hansen

(Managing Director)

(This declaration can be obtained at www.interroll.com, if needed.)

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Version 1.2 (01/2013) en
Original instructions